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SMITHSONIAN OCEANOGRAPHIC SORTING CENTER WASHINGTON DC
IDENTIFICATION OF BIOLOGICAL COLLECTIONS.(U)
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9 FINAL REPORT. 1 Aug '76-31 Jul 87

IDENTIFICATION OF BIOLOGICAL COLLECTIONS

DEPARTMENT OF THE NAVY
NAVAL OCEAN RESEARCH & DEVELOPMENT ACTIVITY

CONTRACT NO. N00014-76-C-1039

CONDUCTED FROM 1 AUGUST 1976 THROUGH 31 JULY 1980

12, 12

10 PRINCIPAL INVESTIGATOR: LESLIE W. KNAPP, Ph.D.
SMITHSONIAN OCEANOGRAPHIC SORTING CENTER
NATIONAL MUSEUM OF NATURAL HISTORY
SMITHSONIAN INSTITUTION
WASHINGTON, D.C. 20560

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The Vertebrates

The specimens identified by the Smithsonian Oceanographic Sorting Center (SOSC) were collected during numerous cruises ranging from 1962 to 1974. These cruises, primarily aboard USNS vessels, covered the Atlantic (North -, Eastern North -, Central North -, Western North -, Western South -, Bermuda Ocean Acre); the Pacific (Eastern -, Central North -, Eastern North -, Deepwater Dumpsite G); the Gulf of Mexico, and the Caribbean, Norwegian, Sarasso and Mediterranean Seas.

There were 94,724 specimens in the 9,923 lots of collected material; all were identified to family level and, where possible, some were identified to genus and species. Specimens were either sized individually or, when numerous, grouped in size classes.

The individual data sheets listing the identified and sized specimens have been forwarded to the Scientific Officer; any specimens retained at SOSC or loaned to other scientists for study are noted on the data sheets. Reproduction and distribution of these sheets to others is precluded, due to their large bulk and weight. However, Appendix 1 (attached) gives a representative idea of the taxa, number of lots and number of specimens collected during two cruises: (1) Cruise Sand in the Eastern Pacific Ocean during October-November, 1969 aboard the USNS De Steiguer (Collector: P. Van Schuyler, et al) and (2) Cruise Caribcap in the Caribbean Sea during June 1974 aboard the USNS Lynch (Collector: W. L. Pugh). This listing represents 27.7% of the Total number of Lots and 32.5% of the Total number of Specimens identified and sized.

The work on the Invertebrates (following pages and Appendix 2) was conducted under the supervision of Frank D. Ferrari, Ph.D., Director, SOSOC, National Museum of Natural History. Additional detailed data on the invertebrates was also forwarded to the Scientific Officer, but cannot be reproduced and distributed to other recipients due to its large bulk, reproduction cost, and weight.

The Pelagic Invertebrates

For the past three years technicians from the Plankton Section of the Smithsonian Oceanographic Sorting Center have been sorting the pelagic marine invertebrates from 758 midwater trawl samples collected for the Naval Oceanographic Office. The sorting, counting, preservation, and labeling of this important collection is now complete. Regarding this collection, it is crucial to note that the characterization and distribution of the deepwater pelagic fauna of the marine biosphere is inadequate. Despite years of intensive oceanographic survey, collections of bathypelagic and mesopelagic fauna available for study are insignificant compared to the vast areas from which specimens are unavailable. Our knowledge of fundamental processes of deepwater pelagic environments lags far behind the more complete picture now emerging of the epipelagic and neritic zones. Against this background these midwater trawl samples collected for the Naval Oceanographic Office will make a significant contribution to knowledge of the deepwater pelagic fauna.

Midwater trawl samples received for processing by the Sorting Center were taken in four major areas: continental slope waters off California; oceanic waters of the east coasts of the Americas; Mediterranean Sea; Denmark and Faroe Straits.

Midwater trawl samples were sorted completely unless the sample volume was prohibitively large, in which case an aliquot was processed. As time permitted remaining aliquots of samples with unusual faunal elements were also sorted.

Specimens from each sample were sorted to major taxonomic categories. A list of these taxa (73), number of specimens per taxa, and number of samples (or entries) are given in Appendix 2. During label preparation the number of specimens in each taxonomic category plus basic station information were entered into the Smithsonian Institution's Honeywell computer for permanent storage.

Over 545,000 specimens from 758 samples have been sorted to 73 major taxonomic categories. Of these the Heteropoda have been requested and are being studied by Dr. Roger Seapy, California State University-Fullerton. The Cephalopoda have been sent to Dr. Clyde Roper, U.S.N.M.N.H. Dr. Taisoo Park, Texas A&M University, is interested in studying the scolecithricid Copepoda and Dr. C. Shih, Canadian National Museum, has requested the Amphipoda.

A measure of the immediate value of this collection is apparent in the interest of the above-mentioned investigators. A further point is worth noting. The cost of operating oceanographic research vessels is continually rising, which will enhance the value of collections already sorted and available for study. The collections made for the Naval Oceanographic Office are now and will continue to be a valuable asset to the oceanographic community, providing basic information on the fauna of the bathypelagic and mesopelagic zones of the world's oceans.

APPENDIX 1

REPRESENTATIVE LISTING OF TAXA, NO. OF LOTS AND NO. OF VERTEBRATE SPECIMENS IDENTIFIED AND SIZED BY SOS

<u>TAXON</u>	<u>NO. OF LOTS</u>	<u>NO. OF SPECIMENS</u>
ALEPOCEPHALIDAE	57	87
ANGUILLIFORMES	27	54
ANOLOGASTERIDAE	1	1
ANTENNARIIDAE	1	1
ANTIHIIDAE	1	1
APOGONIDAE	2	4
ARGENTINOIDEI	66	474
ARIOMMIDAE	1	2
ASTRONESTHIDAE	6	8
AULOSTOMIDAE	1	1
BALISTIDAE	4	5
BATHYLACONIDAE	1	1
BATHYLAGIDAE	113	601
BRAMIDAE	1	1
BREGMACEROTIDAE	9	14
BROTULIDAE	4	4
CARANGIDAE	9	42
CARAPIDAE	1	1
CERATIOIDEI	1	1
CETOMIMIDAE	1	1

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<u>TAXON</u>	<u>NO. OF LOTS</u>	<u>NO. OF SPECIMENS</u>
CHAETODONTIDAE	1	1
CHAULIODONTIDAE	21	26
CHIASMODONTIDAE	3	3
CLUPEIDAE	1	1
CYNOGLOSSIDAE	2	2
DACTYLOPTERIDAE	4	6
DACTYLOPTERIFORMES	1	2
DERICHTHYIDAE	1	1
DIRETMIDAE	10	17
EVERMANNELLIDAE	5	6
GADIDAE	2	2
GEMPYLIDAE	1	1
GONOSTOMATIDAE	431	14,440
GRAMMICOLEPIDIDAE	3	3
IDIACANTHIDAE	56	87
LABRIDAE	3	3
MACROURIDAE	4	4
MACRUROCYTTIDAE	1	1
MALACOSTEIDAE	7	8

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LOTS AND NO. OF VERTEBRATE SPECIMENS IDENTIFIED
AND SIZED BY SOSC

<u>TAXON</u>	<u>NO. OF LOTS</u>	<u>NO. OF SPECIMENS</u>
MELAMPHAEIDAE	156	354
MELANOSTOMIATIDAE	30	47
MYCTOPHIDAE	1,032	12,151
NEMICHTHYIDAE	21	26
NEOSCOPELIDAE	2	5
ONEIRODIDAE	1	1
OPHIDIIDAE	7	7
OPISTHOPROCTIDAE	8	8
PARALEPIDIDAE	40	61
PERCICHTHYIDAE	21	32
PERCIFORMES	4	5
PLEURONECTIFORMES	83	216
POMACENTRIDAE	3	3
PRIACANTHIDAE	1	1
SALMONIFORMES	1	1
SCOMBERESOCIDAE	8	661
SCOMBRIDAE	2	2
SCOPELARCHIDAE	32	42
SCOPELOSAURIDAE	17	28

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<u>TAXON</u>	<u>NO. OF LOTS</u>	<u>NO. OF SPECIMENS</u>
SCORPAENIDAE	53	108
SERRANIDAE	3	4
SERRIVOMERIDAE	15	15
STERNOPTYCHIDAE	269	1,008
STOMIATIDAE	39	45
STOMIATOIDEI	3	3
SYNGNATHIDAE	4	13
SYNODONTIDAE	1	1
TETRAGONURIDAE	3	3
TETRAODONTIDAE	5	8
TRACHYPTERIDAE	2	2
TRICHIURIDAE	3	3
ZOARCIDAE	<u>11</u>	<u>46</u>
TOTAL	<u>2,746⁽¹⁾</u>	<u>30,828⁽²⁾</u>

(1) OF 9,923 TOTAL LOTS IDENTIFIED

(2) OF 94,724 TOTAL SPECIMENS IDENTIFIED

APPENDIX 2. Taxonomic categories, number of specimens per category and number of samples (entries) per category for all pelagic invertebrates.

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TAXON	SPECIMENS	NUMBER OF LOTS	ENTRIES
AMPHIOXUS	71		7
AMPHIPODA	25,830		748
ANOMURA	14		1
ANOMURA-LARVAE	221		57
ANOMURA/BRACHYURA-LARVAE	109		34
ANTHOZOA	111		42
BRACHIOPODA-LARVAE	1		1
BRACHYURA-LARVAE	323		93
BRYOZOA	9		1
CARIDEA	956		166
CEPHALOPODA	464		188
CHAETOGNATHA	34,142		777
CIRRIPEDIA	413	1	7
CIRRIPEDIA-LARVAE	389	1	61
CLADOCERA	9		7
CNIDARIA	1		1
COPEPODA	6,999		301
COPEPODA-PARASITIC	10		6
COPEPODA-RESIDUE	186,904		534
CTENOPHORA	420		77
CYPHOGNAUTES	5		2
DECAPODA	289		4
DECAPODA-LARVAE	12,281		606
DOLIOLIDAE	3,894		347
ECHINODERMATA-LARVAE	28		8
ERYONIDEA	2		1
ERYONIDEA-LARVAE	9		5
EUPHAUSIACEA	81,618		831
FORAMINIFERA	1,951		45
GASTROPODA-JUVENILE	2,779		151
HALOBATES	946		18
HEMICHORDATA-TORNARIA	124		3
HETEROPODA	2,196		318
HYDROZOA	3		3
HYDROZOA-MEDUSAE	98		12
HYDROZOA-POLYP	1		1
INSECTA	52		16
ISOPODA	200		91
LARVACEA	477		56
LOPHOGASTRIDA	16		11
LUCIFER	4		1
MEDUSAE	4,896		497
MYSIDACEA	4,141	1	263
NEMATODA	27		15
NUDIBRANCHIA	2		2
OPHIUROIDEA	1		1
OSTRACODA	29,977		337
PELECYPODA-JUVENILE	65		21
PENAEIDEA	2,591		217
PENAEIDEA-SOLENOCERA	116		24
PHRONIMIDAE	1,419		216
PISCES-EGGS	1,210		174

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U S N O - TAXA REPORT

TAXON	SPECIMENS	NUMBER OF:	LOTS	ENTRIES
PISCES-LARVAE	1,720			239
PLATYHELMINTHES	3			3
POLYCHAETA	1,538			249
PROTOZOA-EPIZOIC	15			6
PTEROPODA	10,978			509
PYCNOGONIDA	1			1
PYROSOMIDAE	2,376			163
RADIOLARIA	405			111
RESIDUE				58
RHYNCHOCELA	32			13
SALPIDAE	29,588			612
SARGASSUM			2	2
SCYLLARIDEA-PHYLLOSOMA	225			80
SCYPHOZOA-MEDUSAE	80			34
SERGESTIDAE	262		2	2
SERGESTIDAE-LARVAE	52			13
SIPHONOPHORA	88,059			804
SIPUNCULIDA-LARVAE	108			26
STOMATOPODA-LARVAE	4,293			102
UNKNOWN	8			3
WORM TUBES	6			2
TOTAL:	548,563		65	10,438

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